

On Myomorphus cubensis, a new Subgenus of Megalonyx.

By M. POMEL.

The subject of this note is a mandible, almost reduced to its dentary portion, which was among the objects sent to the French Exhibition of 1867 by M. Fernando de Castro. It was found in some excavations at the baths of Ciego-Montero, and given by Don José Figueroa. From the analogy of the matrix, the author associates with it some plates of tortoises and the posterior part of the mandible of a crocodile, probably allied to the alligators. The bed is probably of quaternary age.

The mandible has the characters of *Megalonyx*, and the same dental formula—three teeth in a row, and a fourth isolated in front. The molars of the series are prismatic, with a long root, slightly arched, the concavity being turned backward; they are nearly triangular, with the angles, especially the inner one, blunt and rounded. The outer side, which is shortest, is a little depressed in the middle; the anterior side is nearly straight, and the posterior very convex, rounded especially towards the inner angle, which is the thickest. The first of these teeth has the outer side a little oblique; the second is of nearly the same size and form, but its outer side is parallel to the alveolar line: the diameters of their crowns are as 16:21. The third has its two diameters equal, in consequence of the widening of the outer surface; and its postero-interior side forms a portion of a cylinder.

The crown is convex, with anterior and posterior ridges produced by two transverse crests of very hard dentine, playing the part of enamel. In their minute structure, these teeth show five very distinct concentric zones, divisible into two groups of analogous substance. The outer zone is a pellicle of very dense substance, traversed by a few canals, and shining at its surface like enamel. The second zone consists of a substance like ivory, with its transverse fracture grained and reticulated by canals ascending obliquely inwards. This substance seems to be of the same nature as the outer pellicle, but to have more numerous canals and less density. It is the cement of many authors; but, unlike the cement of the teeth of the Ungulata, it has much more analogy with that of the bones, and may be named *eburnoid*. This zone forms the outer slopes of the ridges of the crown, where it is about 2 millimetres thick; it becomes suddenly thin, in order to follow the outer and inner margins.

The third zone is formed by a very hard dentine, of fibrous appearance, but really finely transversely vascular. This forms the crests of the coronal ridges, where it shows a thickness of $\frac{1}{2}$ millimetre, and becomes gradually thinner on each side. The fourth zone only differs from this in its less hardness and its duller aspect, due, no doubt, to a coarser vascularity. It occupies the inner slopes of the ridges, and, like the eburnoid substance, which it equals in thickness, becomes much attenuated at the inside and outside, until it becomes scarcely discernible. In its broader part it seems to form fine concentric layers. These two zones constitute the hard

dentine of odontologists. The fifth zone, forming the axis of the tooth and the bottom of the coronal hollow, is the softest of all; it is the vascular dentine of authors. Its apparently fibrous structure is more loosely vascular than that of the hard dentine; its ascending canals become more and more oblique towards the crown. The diminution of the four outer zones towards the inner and outer margins causes a greater extension of the vascular dentine in these directions; and this arrangement explains why the coronal hollow opens outwardly.

These teeth have no rootlets, unless late in life. The part first organized seems to be the zone of hardest or enamel-like dentine; but the eburnoid substance seems to be nearly coincident in its formation.

The first tooth is separated from the others by a rather wide gap, and thrown nearly to the margin of the mandible, where it somewhat resembles a very broad incisor of a rodent; its transverse section is crescentiform, with the horns blunt and rounded off, and the concavity behind. The bone of the mandible is produced a very little beyond this tooth, in the form of a very short beak, channelled beneath. The two diameters of the tooth are as 10:22. It has a pellicle of false enamel; but the whole interior of the tooth is formed by a compact homogeneous substance, not unlike the ivory of the hippopotamus. It shows no trace of vascularity. An arched line in its middle seems to indicate a band of a different and perhaps softer nature.

The mandibular bone is remarkable for the parallelism of the two dental margins and the narrowness of the interval separating them, the depth of its ramus beneath the molars, the strong convexity of the lower margin beneath this same point, the great extent of the symphysis, and the very oblique elevation of the anterior margin towards the terminal beak. Except in these and some other details, the bone closely resembles its homologue in *Megalonyx Jeffersoni*.

The differences of the dental system in this animal and *Megalonyx* are as great as those by which the genera *Myiodon*, *Scelidotherium*, and *Gnathopsis* are distinguished. The serial molars in *Megalonyx* are nearly equal and subquadrangular; in the present animal they are rather triangular, and the last is distinctly the largest. The isolated tooth in *Megalonyx* is very oblique, and has an elliptical section, whilst in the Cuban fossil it is more arched in the direction of its length, and much more like an incisor. This character is of great importance, and might seem to be an advance towards the dentition of *Tylotherium* (*Mesotherium*, Serr.), if the similar tooth in the latter did not appear to be a true incisor. The rest of the skeleton will no doubt furnish further characters: for the present, the author forms for this animal a new subgeneric section, to which he gives the name of *Myomorphus*; and the species may be called *Megalonyx* (or *Myomorphus*) *cubensis*. The author gives the following measurements as compared with those of *Megalonyx*:—

	<i>Myomorpus.</i>	<i>Megalonyx.</i>
Length of dentary ramus from the last molar to the anterior margin	115 mill.	150 mill.
Space occupied by the three serial teeth	63 „	60 „
Length of the bar	30 „	40 „
Depth of the dentary ramus below the serial molars	70 „	100 „
Interior separation of the two rami towards the last molar	18 „	18 „

—*Comptes Rendus*, tome lxxvii. September 28, 1868, pp. 665–668.

On Capillary Vascular Systems in the Gasteropoda.

By Professor C. WEDL.

The theory proposed by Milne-Edwards, that in the Mollusca the arterial and venous systems are not united by a capillary system, but that a system of lacunæ destitute of proper walls intervenes between them, is not confirmed in the Gasteropoda investigated by the author. In *Helix*, *Limax*, *Turbo*, *Lymnæus*, and *Murex* he has ascertained the existence of closed capillary systems, with proper walls and characteristic of the different organs; these may be displayed by injection either from the arterial or the venous side. The existence of a lacunar system must be denied even in the respiratory organs. Nor could he convince himself that the vascular system is open either towards the cavity of the body or the outer surface. Hence the theory of the imperfect circulation of the blood in the Gasteropoda is at least not of universal application.—*Anzeige der Akad. der Wiss. in Wien*, July 23, 1868, p. 179.

On some new Fossil Fish from the Lias of Lyme Regis.

By Sir PHILIP DE M. GREY EGERTON, Bart., M.P., F.R.S., F.G.S.

1. *Osteorachis macrocephalus*, gen. et spec. nov.—A Sauroid fish, chiefly remarkable for the massive dimensions and complete ossification of the bodies of the vertebræ, and characterized by the large size of the head and the multiplicity of the teeth.

2. *Isocolum granulatum*, gen. et spec. nov.—For elegance of form this fish can vie with the salmon of modern times, its contour being very similar. It bears the greatest resemblance to the Sauroid genus *Caturus*, but in the absence of the teeth it cannot be assigned with certainty to any particular family.

3. *Holophagus gulo*, spec. nov.—A cœlacanth fish, remarkable for its resemblance, especially in the contour of the head, to the Cretaceous genus *Macropoma*, and for substantiating Prof. Huxley's demonstration of the persistence of type presented by this family, which ranged from the Coal-measures to the Chalk.

4. *Eulepidotus sauroides*, gen. et spec. nov.—This first represents a genus uniting the Lepidoid and Sauroid families of Agassiz's Ganoid order; the teeth and the tail being Sauroid in character, while the fins are Lepidoid, and the scales partake of the characters of those structures in both families.—*Proc. Geol. Soc.* June 17, 1868.